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# Surface Mount Zener Diodes

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# CZRL55C2V4 Thru CZRL55C75

**Voltage: 2.4 - 75 Volts**
**Power: 500 mW**

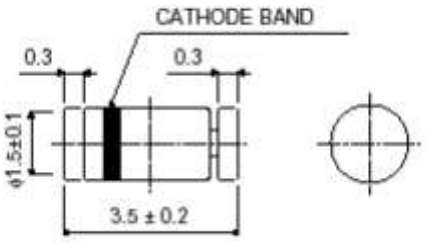
## Features

Silicon Planar Power Zener Diodes

For use as low voltage stabilizer or voltage reference.

The Zener voltages are graded according to the international E 24 standard. Higher zener voltages and 1% tolerance available on request.

**MiniMELF (SOD-80)**




Dimensions in mm

## Mechanical data

Case: MiniMELF Glass Case (SOD-80)

Approx. Weight: 0.05 g

## Maximum Ratings and Thermal Characteristics ($T_A$ = 25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Zener Current see Table “Characteristics” | | | |
| Power Dissipation at $T_{flange}$ = 50°C | $P_{tot}$ | 500 | mW |
| Power Dissipation at $T_A$ = 50°C | $P_{tot}$ | 400(1) | mW |
| Junction temperature | $T_J$ | –65 to +200 | °C |
| Storage temperature range | $T_S$ | –65 to +200 | °C |
| Continuous Forward Current | $I_F$ | 250 | mA |
| Thermal Resistance Junction to Ambient Air | $R_{\theta JA}$ | 0.38(1) | °C/mW |
| Thermal Resistance Junction to Lead | $R_{\theta JL}$ | 0.30 | °C/mW |
| Peak reverse power dissipation (non-repetitive) $t_p$ = 100µs | $P_{ZSM}$ | 30(2) | W |

**Notes:** (1) Mounted on ceramic substrate 10mm x 10mm x 0.6mm
(2) Tj = 150°C

## Maximum Ratings and Electrical Characterics

(TA=25°C unless otherwise noted) Max. $V_F$ = 0.9V at $I_F$ = 10mA

| Type<br>y = B for ±2% VZ<br>y = F for ±3% VZ<br>y = C for ±5% VZ | Dynamic Resistance<br>at $I_Z$ = 5mA<br>f = 1kHZ<br>$r_{zj}$ (ohm) max | <br>at $I_Z$ = 1mA<br>f = 1kHZ<br>$r_{zj}$ (ohm) max | Temperature coefficient of Zener Voltage at $I_Z$ = 5mA<br>$_{VZ}$ (% / °C)<br>Min | <br><br>Max | Reverse leakage current at $T_{amb}$ = 25°C<br>$I_R$ (uA) | <br>at $V_R$ (V) |
|---|---|---|---|---|---|---|
| CZRL55C2V4 | 100.0 | 600 | –0.08 | –0.06 | 50 | 1 |
| CZRL55C2V7 | 100.0 | 600 | –0.08 | –0.06 | 20 | 1 |
| CZRL55C3V0 | 95.0 | 600 | –0.08 | –0.06 | 10 | 1 |
| CZRL55C3V3 | 95.0 | 600 | –0.08 | –0.05 | 5 | 1 |
| CZRL55C3V6 | 90.0 | 600 | –0.08 | –0.04 | 5 | 1 |
| CZRL55C3V9 | 90.0 | 600 | –0.07 | –0.03 | 3 | 1 |
| CZRL55C4V3 | 90.0 | 600 | –0.04 | –0.01 | 3 | 1 |
| CZRL55C4V7 | 80.0 | 500 | –0.03 | +0.01 | 3 | 2 |
| CZRL55C5V1 | 60.0 | 480 | –0.02 | +0.05 | 2 | 2 |
| CZRL55C5V6 | 40.0 | 400 | –0.01 | +0.06 | 1 | 2 |
| CZRL55C6V2 | 10.0 | 150 | 0 | +0.07 | 3 | 4 |
| CZRL55C6V8 | 15.0 | 80 | +0.01 | +0.08 | 2 | 4 |
| CZRL55C7V5 | 15.0 | 80 | +0.01 | +0.09 | 1 | 5 |
| CZRL55C8V2 | 15.0 | 80 | +0.01 | +0.09 | 0.7 | 5 |
| CZRL55C9V1 | 15.0 | 100 | +0.02 | +0.1 | 0.5 | 6 |
| CZRL55C10 | 20.0 | 150 | +0.03 | +0.11 | 0.2 | 7 |
| CZRL55C11 | 20.0 | 150 | +0.03 | +0.11 | 0.1 | 8 |
| CZRL55C12 | 25.0 | 150 | +0.03 | +0.11 | 0.1 | 8 |
| CZRL55C13 | 30.0 | 170 | +0.03 | +0.11 | 0.1 | 8 |
| CZRL55C15 | 30 | 200 | +0.03 | +0.11 | 0.05 | 10 |
| CZRL55C16 | 40 | 200 | +0.03 | +0.11 | 0.05 | 11 |
| CZRL55C18 | 45 | 225 | +0.03 | +0.11 | 0.05 | 13 |
| CZRL55C20 | 55 | 225 | +0.03 | +0.11 | 0.05 | 14 |
| CZRL55C22 | 55 | 250 | +0.03 | +0.11 | 0.05 | 15 |
| CZRL55C24 | 70 | 250 | +0.04 | +0.12 | 0.05 | 17 |
| CZRL55C27 | 80(3) | 300(4) | +0.04(3) | +0.12 (3) | 0.05 | 19 |
| CZRL55C30 | 80(3) | 300(4) | +0.04(3) | +0.12 (3) | 0.05 | 21 |
| CZRL55C33 | 80(3) | 325(4) | +0.04(3) | +0.12 (3) | 0.05 | 23 |
| CZRL55C36 | 90(3) | 350(4) | +0.043) | +0.12 (3) | 0.05 | 25 |
| CZRL55C39 | 130(3) | 350(4) | +0.04(3) | +0.12 (3) | 0.05 | 27 |
| CZRL55C43 | 150(3) | 375(4) | +0.04(3) | +0.12 (3) | 0.05 | 30 |
| CZRL55C47 | 170(3) | 375(4) | +0.04(3) | +0.12 (3) | 0.05 | 33 |
| CZRL55C51 | 180(3) | 400(4) | +0.04(3) | +0.12 (3) | 0.05 | 36 |
| CZRL55C56 | 200(3) | 425(4) | typ. +0.1(3) | | 0.05 | 39 |
| CZRL55C62 | 215(3) | 450(4) | typ. +0.1(3) | | 0.05 | 43 |
| CZRL55C68 | 240(3) | 475(4) | typ. +0.1(3) | | 0.05 | 48 |
| CZRL55C75 | 255(3) | 500(4) | typ. +0.1(3) | | 0.05 | 53 |

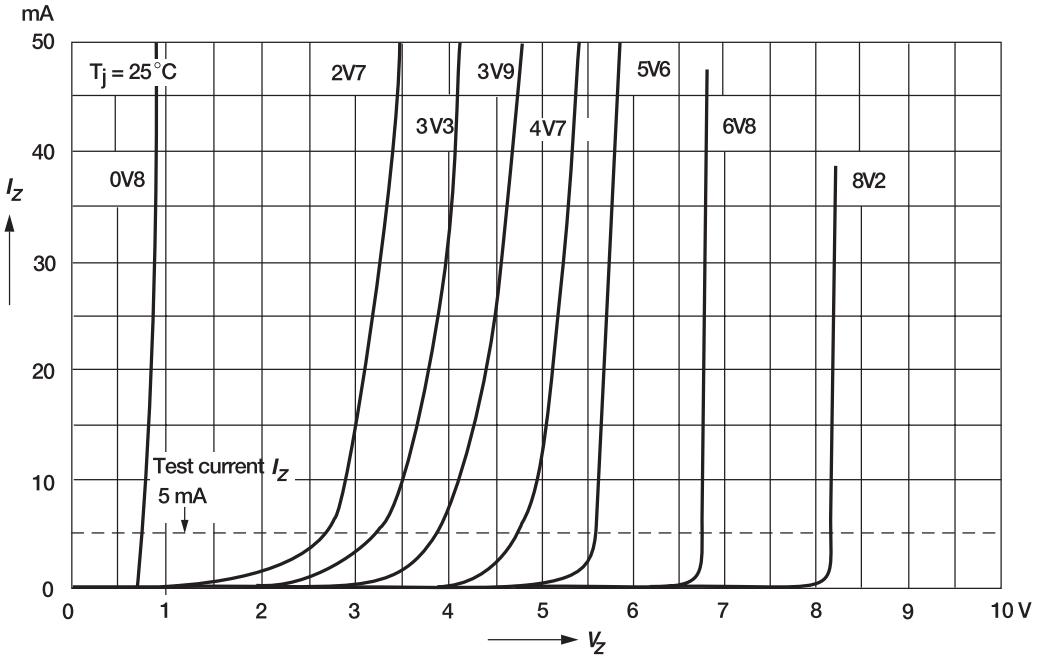
Notes:
(1) Tested with pulses tp = 5 ms.
(2) Valid provided that electrodes are kept at ambient temperature.
(3) at IZ = 2.0 mA
(4) at IZ = 0.5 mA
y = Zener voltage tolerance designator (see next page for VZ specifications)

## Rating and Characteristic Curves (CZRL55C2V4 Thru CZRL55C75)

($T_A$ = 25°C unless otherwise noted)

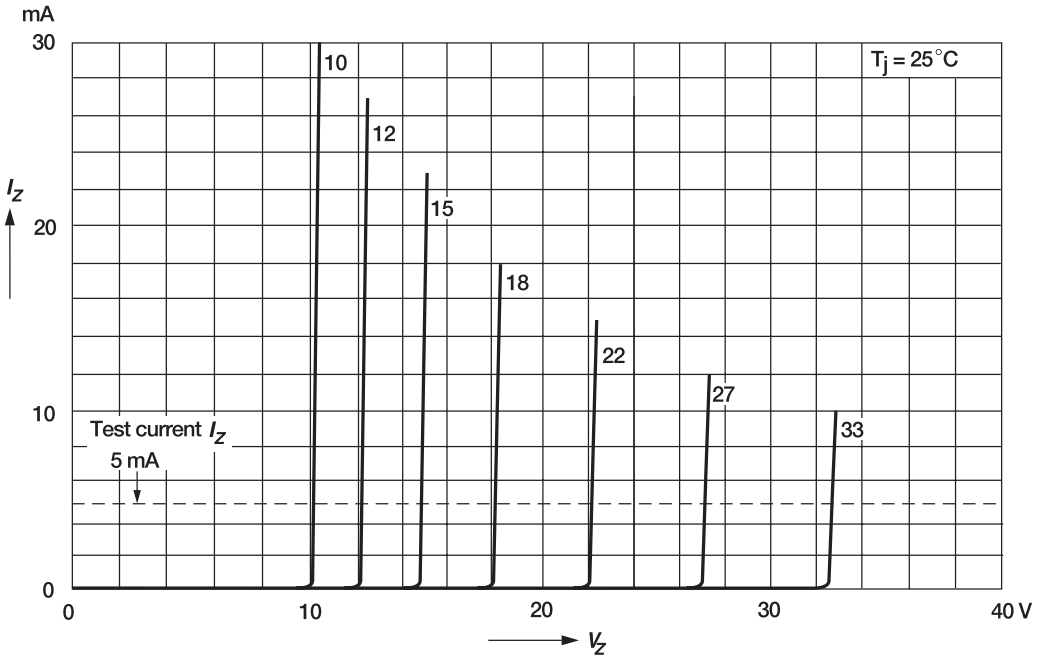
**Breakdown characteristics**

at $T_j$ = constant (pulsed)




**Breakdown characteristics**

at $T_j$ = constant (pulsed)

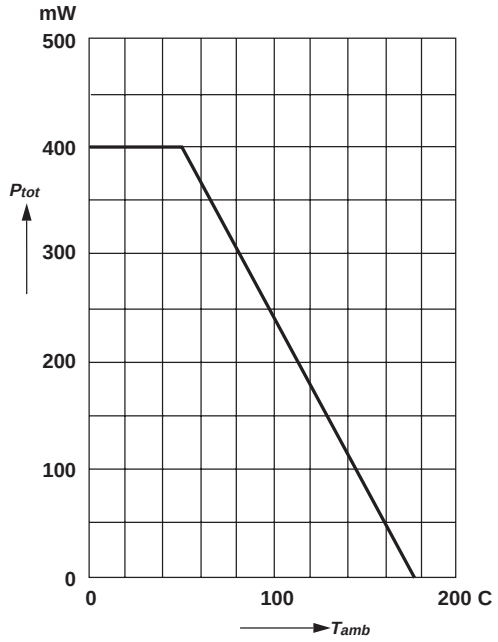


## Rating and Characteristic Curves (CZRL55C2V4 Thru CZRL55C75)

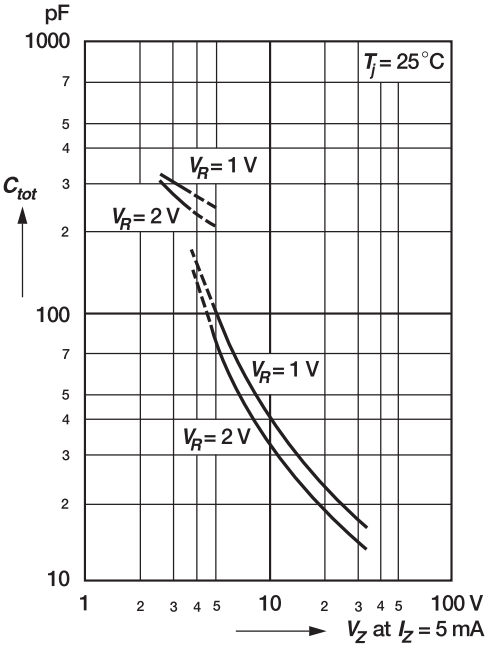
($T_A$ = 25°C unless otherwise noted)

### Admissible power dissipation versus ambient temperature

**Valid provided that leads are kept ambient temperature.**

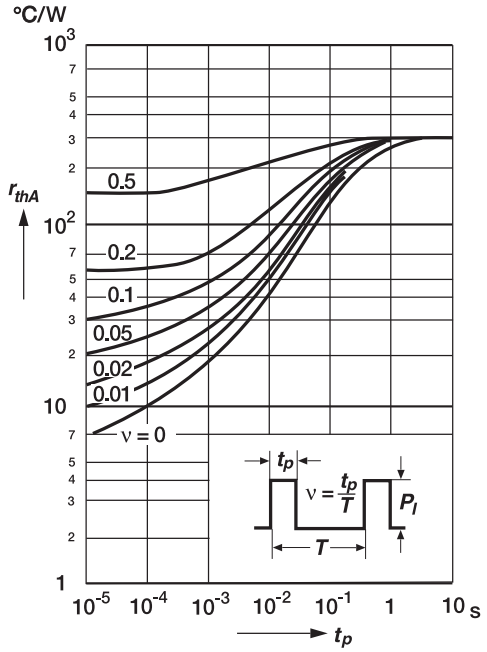



### Capacitance versus Zener voltage

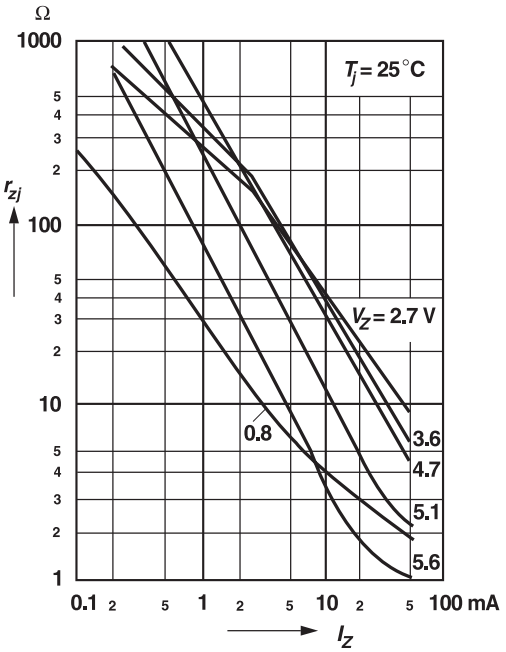



### Pulse thermal resistance versus pulse duration

Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



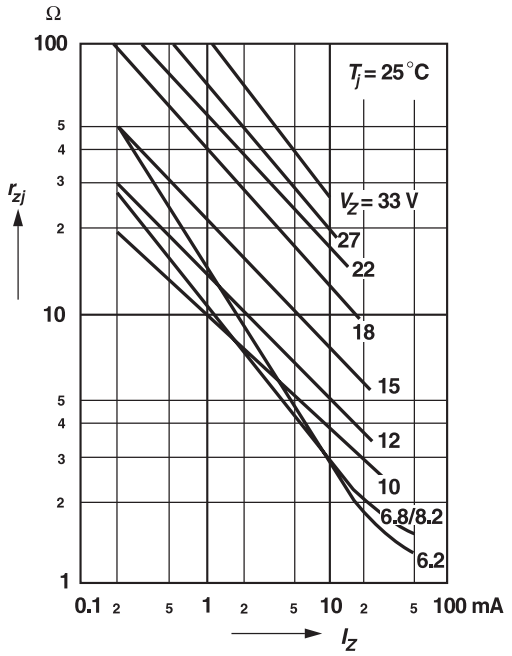

### Dynamic resistance versus Zener current



## Rating and Characteristic Curves (CZRL55C2V4 Thru CZRL55C75)

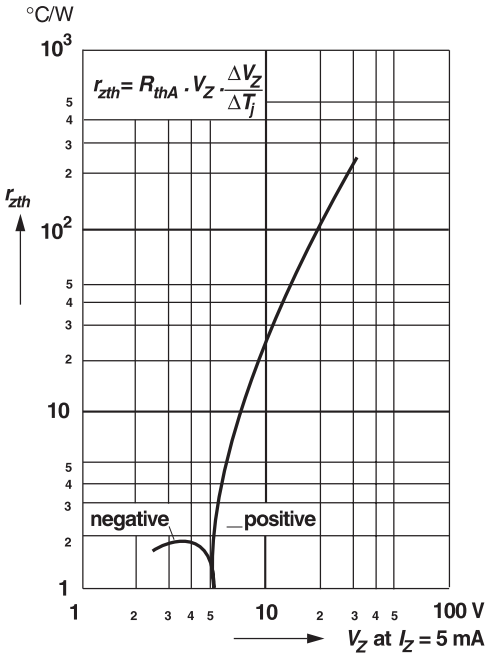
($T_A$ = 25°C unless otherwise noted)

**Dynamic resistance versus Zener current**

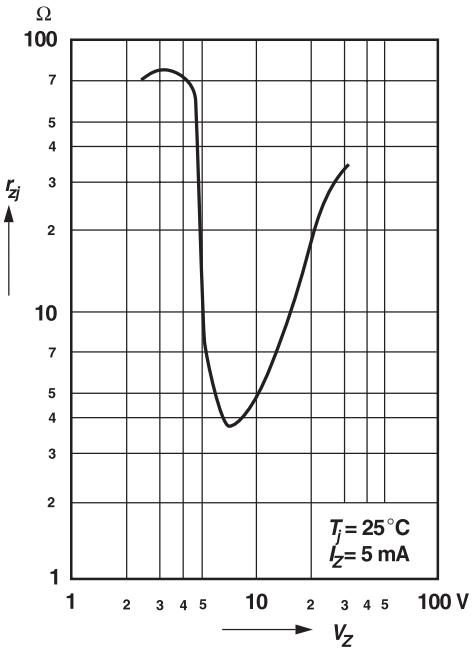



**Thermal differential resistance versus Zener voltage**

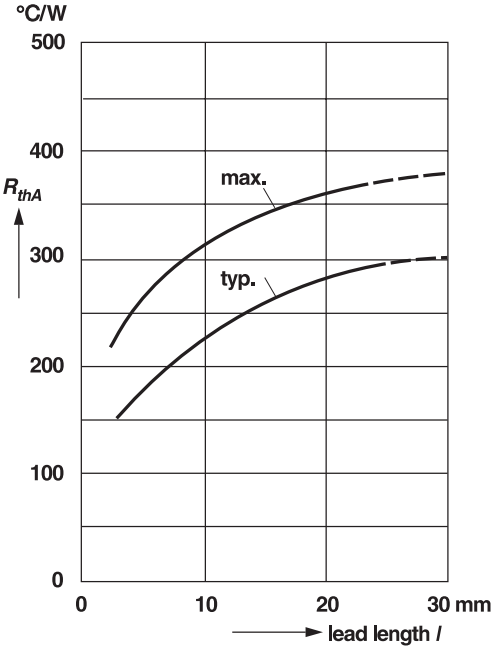
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.




**Dynamic resistance versus Zener voltage**



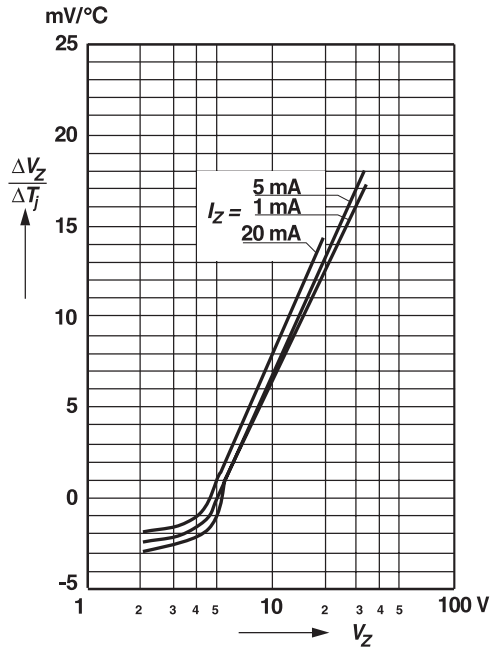

**Thermal resistance versus lead length**



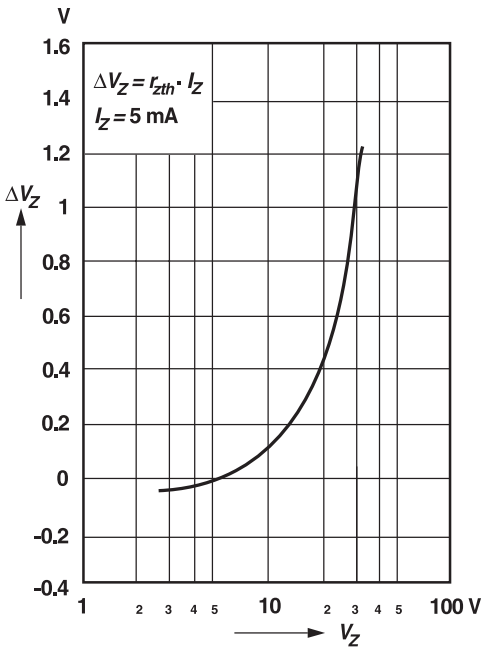
## Rating and Characteristic Curves (CZRL55C2V4 Thru CZRL55C75)

($T_A$ = 25°C unless otherwise noted)

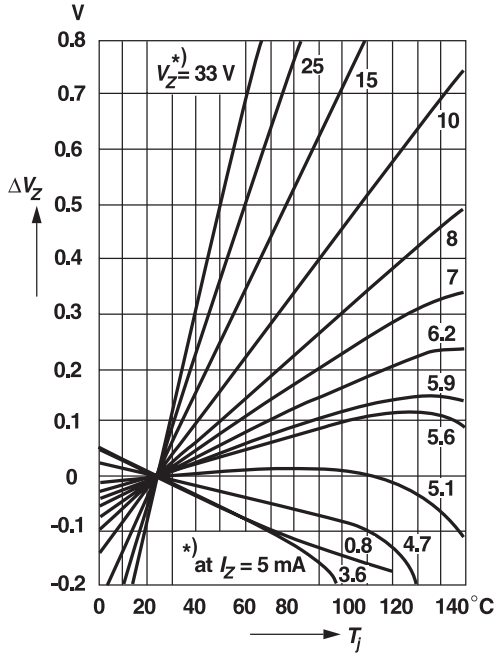
**Temperature dependence of Zener voltage versus Zener voltage**




**Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage**




**Change of Zener voltage versus junction temperature**



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